ANNUAL PROGRESS REPORT

SEATO Medic Study No. 24	Studies on Opisthorchis viverrini in Thailand Experimental Laboratory Hosts
Project No. 3A 025601 A 811	Military Medical Research Program S. E. Asia
Task 01:	Military Medical Research Program S. E. Aisa
Subtask 01:	Military Medical Research Program SEASIA (Thailand)
Reporting Installation:	US Army-SEATO Medical Research Laboratory, APO 146, San Francisco, California.
	Division of Medical Research Laboratories
	Department of Medical Zoology
Period Covered by Report:	1 April 1963 to 31 March 1964
Principal Investigator:	Major Dale E. Wykoff, MSC
Associate Investigator:	Mr Seri Rungruang
Reports Control Symbol:	MEDDH-288
Security Classification:	UNCLASSIFIED

ABSTRACT

SEATO Medic Study No. 24	Studies on Opisthorchis viverrini in Thailand-Experimental Laboratory Hosts
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The purpose of this study was to collect basic information on various animals which might be used as experimental definitive hosts for O. viverrini. The animals found suitable are rabbits, hamsters and cats. Macaque monkeys are presently under test. Data have been gathered on prepatent period, size of larvae during development, percentage of metacercariae developing to adults and on the number of eggs per worm per day, Each type animal offers certain specific advantage, and selection of the "optimum" experimental laboratory host depends on the purpose of the specific research project.

BODY OF REPORT

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Objective: Because O. viverrini has just recently been found to be an important human parasite, it is anticipated that workers will need to infect animals for various experiments. The purpose of this study is to evaluate several types of animals as to their suitability as definitive hosts, and to provide some basic information concerning the host-parasite relationship.

Description: Rabbits, hamsters, cats and macaque monkeys were force-fed metacercariae of O. viverrini which had first been removed from the flesh of freshwater fish and counted. The prepatent period was determined by carefully examining the stool each day until eggs first appeared. Data on the number of eggs per worm were determined by making replicate stool counts to determine the number of eggs per gram feces. The animal was then sacrificed and the total of worms carefully counted.

Progress: Eighteen hamsters were given inocula of from 100 to 500 metacercariae per os. The prepatent period was found to vary from 22 to 28 days with a mean of 25. The average number of eggs per gram feces per day was 10,159. Of the metacercariae given to these animals, from 22 to 89% were subsequently recovered as adult worms. The mean percentage recovery was 49. The average number of eggs per worm per day was 1500. Twelve cats were given graded inocula of from 200 to 400 metacercariae. An average of 59% were subsequently recovered as

adult worms, and the average number of eggs per gram feces was found to be 2000. Of 19 rabbits given from 100 to 500 metacercariae each, it was determined that the prepatent period ranged from 22 to 44 days (mean 31). The average number of eggs per worm per day was only 400. Five macaque monkeys were given 400 metacercariae each. After 40 days no eggs had been found in the stool and two animals were sacrificed. On gross examination, no parasites were found in the liver, but sections revealed some changes which may have been caused by a trematode remaining for a short period in the bile passages.

Summary: The cat, a natural piscivor, appeared to be the most easily infected host. It showed a high percentage development of metacercariae to adults, and a large number of eggs per worm per day. As a host to provide a large number of adult worms, the cat seems to be most suitable. Difficulty in handling and housing must be taken into consideration, however, as must local taboos concerning the sacrificing of these animals. The rabbit is also a suitable host, but fewer worms develop and a much smaller number of eggs are passed in the stool. The hamster is easily handled and a relatively good host. For experiments not calling for large numbers of worms, it should be considered first. The macaque monkey will require further study before a final determination of its suitability can be made.

Conclusion: Rabbits, hamsters and cats are suitable experimental definitive hosts for infection with *O. viverrini*. The final choice of host depends on the individual requirements of the experiment. Cats provide the largest number of worms, rabbits provide a good source of serum, and hamsters are easily handled.